

General Mills, Inc.  
Mechanical Division



AD No. 19115

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ENGINEERING RESEARCH & DEVELOPMENT

MINNEAPOLIS

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GENERAL MILLS, INC.  
Mechanical Division  
Engineering Research & Development Department  
2003 E. Hennepin  
Minneapolis 13, Minn.

FINAL REPORT

PROJECT 85008

REPORT NO. 1226

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DATE: 4 SEPTEMBER 1953

APPROVED BY

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## I. INTRODUCTION

On 21 August 1952, Contract Noar 875(00) between General Mills, Inc. and the Office of Naval Research was amended to provide for the execution of an experiment designed to carry a scientific payload to high altitudes. A payload was supplied by the Naval Research Laboratory, Nucleonics Division. General Mills, Inc. was to supply a "Skyhook" balloon to carry the load aloft, together with balloon controls, recording and safety equipment. The flight was to be launched by General Mills technical personnel.

## II. PROJECT PROGRAM

A traditional "Skyhook" balloon flight program was outlined for this project. The balloon was flown from Pyote Air Force Base, Pyote, Texas, on 29 August 1952. The following items constituted the flight train:

1. A polyethylene balloon, 85 feet in diameter, 1 mil thick.
2. A 28-foot parachute on which the instruments and payload were to be returned to earth.
3. A timer set to cut the load free from the balloon at a predetermined time when the scientific experiment is concluded.
4. Safety devices required by C.A.A., including a pressure switch set to prevent floating below 80,000 ft.
5. A barograph to give a record of the altitude reached.
6. A radio transmitter whose signal is modulated by a pressure sensor.
7. A payload provided by the Naval Research Laboratory, Nucleonics Division.

8. An additional small payload provided by the National Institutes of Health, Bethesda, Maryland.

Helium provided by the Navy was used for inflation.

The balloon and accessory equipment was flown successfully and the desired services were provided. Tracking was attempted using an Air Force AT-6 from Pyote Air Force Base. Poor mechanical condition prevented a successful tracking effort. The balloon landed in Mexico, and the equipment and payload were found and returned in good condition.

The flight data are presented in the next section of this report.

It is hoped that the scientific payload performed satisfactorily and that the entire operation met with success. General Mills, Inc. is happy to have had the opportunity of working with the Office of Naval Research and the Naval Research Laboratory in carrying out this experiment.

CENTRAL MILLS, INC.  
Engineering Research and Development Department  
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 879 Date: 29 August 1952  
Launch site: Pyote AFB Launching time: 0657 CST  
Balloon type: 851A Serial No.: 501 Weight: 148#  
Who: MRL - Shapiro  
What: Plates, Beacon, Barograph & Timers  
Scheduled duration: 10 1/2 hrs. Load on Balloon: 117#  
Actual Duration: 10 1/2 hrs.  
Gross Load: 265# Free lift: 34.5# 13% gross load  
Maximum altitude: 101,000 ft. Rate of rise: 1029 ft/min to 97,000 ft.  
Theoretical Altitude: 101,800 ft. Altitude Maintenance: Excellent  
Recovery: where? 50 Mi. SW Douglas, Arizona.  
Balloon Success: Excellent  
Scientific Purpose: To carry plates for MRL Nucleonics Division.  
Scientific Success as known: Late recovery caused much background on plates  
though data very usable per Nat Seeman (MRL)  
Critique: Launched in lee of hangar. Wind shear over hangar held balloon down after  
leaving platform and dragged balloon 75 ft. on ground. High rate of rise.

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ESTIMATED TRAJECTORY FROM WINDS ALUFT DATA;  
EL PASO STATION REPORTS, 21500Z AND  
TUCSON STATION REPORTS, 300300Z

ALBUQUERQUE

HOLLOMAN AFB

EL PASO

DOUGLAS

IMPACT: 50 MI SW  
DOUGLAS, AR 17  
1822, 8-29-52

EL PASO

DOUGLAS

IMPACT: 50 MI SW  
DOUGLAS, AR 17  
1822, 8-29-52

ESTIMATED POSITION  
AT RELEASE,  
1250-101, 100 FT.

ESTIMATED POSITION  
MAXIMUM ALTITUDE,  
1250-101, 100 FT.

LAUNCH SITE  
PYOTE, TEXAS  
0657, 8-29-52

CONFIDENTIAL

CENTRAL STANDARD TIME

APP.

SCALE

1:5,000,000

PROJ. 6 5008

D.R.

DATE

11-20-52

STATUTE MILES

1953

BALLOON TRAJECTORY, FLIGHT NO. 879, FOR  
KRL SHAPIRO, STILLER, FLOWN 25 AUG. 1952

A-21023A

GENERAL MILLS, INC., ENGINEERING RESEARCH AND DEVELOPMENT DEPARTMENT, MINNEAPOLIS, MINN.

